

Nutsedge and Weed Management

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Outline

- Yellow nutsedge
- Integrated Weed Management
- Current research on yellow nutsedge in potatoes



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- **Yellow nutsedge**
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Yellow nutsedge in onion field, Pasco, WA



Yellow nutsedge in potato field, Pasco, WA



Tim Waters, Washington State University



Yellow nutsedge in cilantro



Franki Porter, Wilbur-Ellis

Yellow nutsedge in rhubarb



Franki Porter, Wilbur-Ellis



Yellow Nutsedge (*Cyperus esculentus*)

Biology

- Perennial, belongs to sedge (*Cyperaceae*) family
- Native of North America
- Favors wet environment
- Seedhead yellowish-brown or straw color



plant



seedling



Triangular stem



Flower

- Forms brown to tan- colored tubers at the tips of rhizomes



- A single tuber can produce about 1,900 plants and over 7,000 tubers in a growing season

Purple Nutsedge v.s. Yellow Nutsedge

	Purple Nutsedge	Yellow Nutsedge
Leaf color	Darker green color	Light green color
Leaf tip	Blunt	Sharp
Seedhead color	Reddish- purple color	Yellowish-brown or straw color
Tubers	Produce tubers in chains connected by rhizomes	Produce tubers at the tips of rhizomes



Purple nutsedge

Yellow nutsedge



Purple Nutsedge

Yellow Nutsedge

Outline

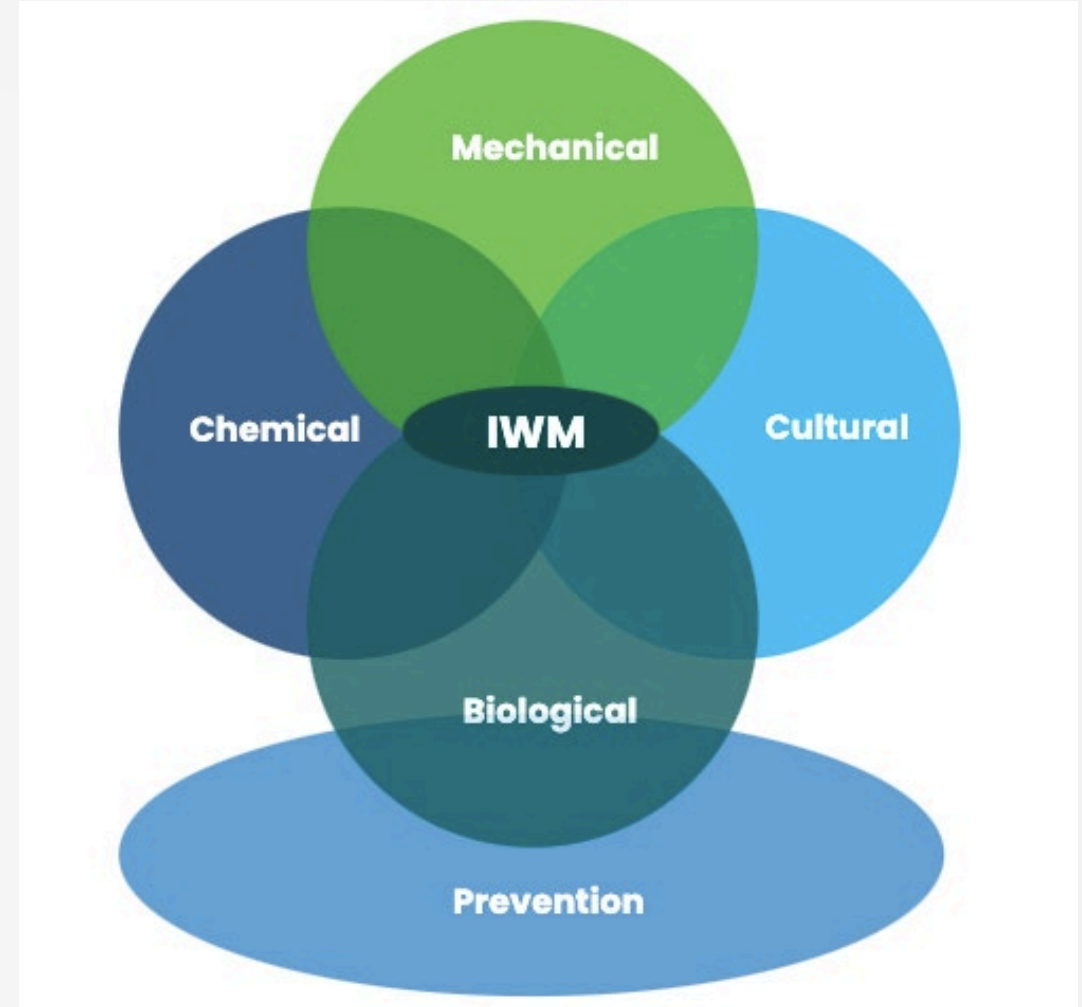
- Yellow nutsedge
- **Integrated Weed Management**
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Integrated Weed Management (IWM)

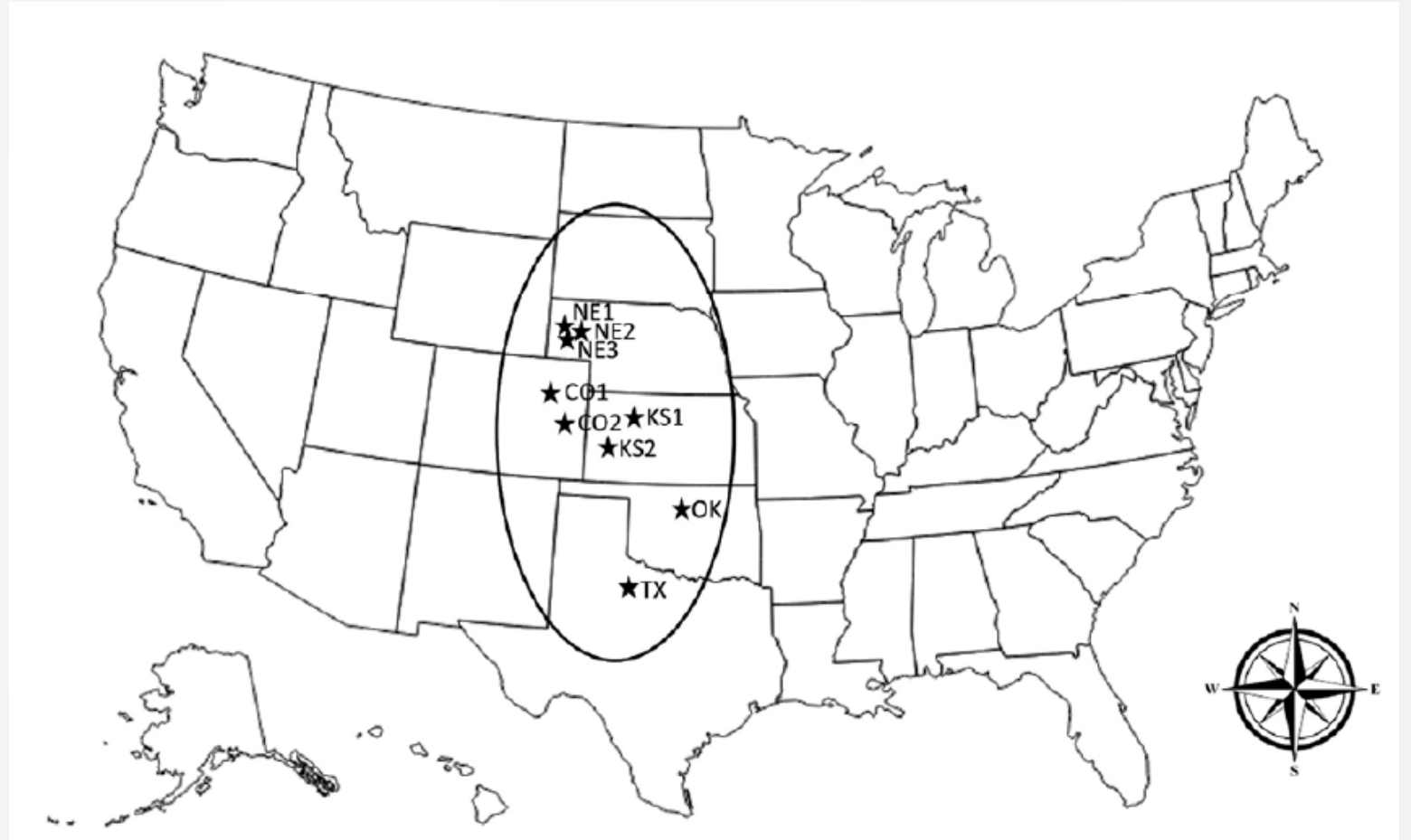
- Using multiple control tactics
- Include many methods in a growing season to allow producers the best chance to control troublesome weeds

When should we manage weeds?



IWM is composed of mechanical, cultural, chemical and biological tactics (credit: GROW)

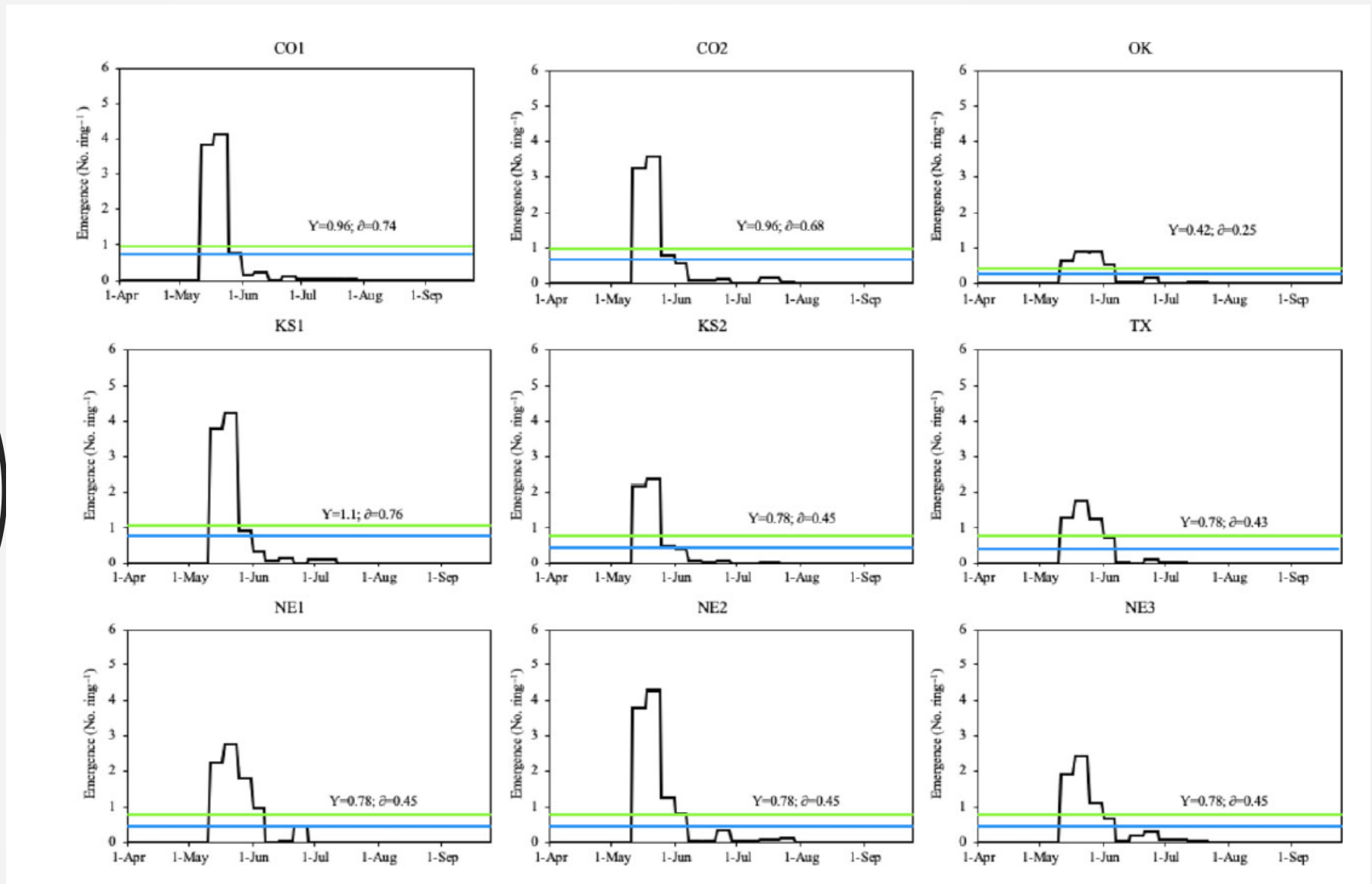
Emergence pattern
and periodicity
of Palmer amaranth
populations from
southcentral Great
Plains



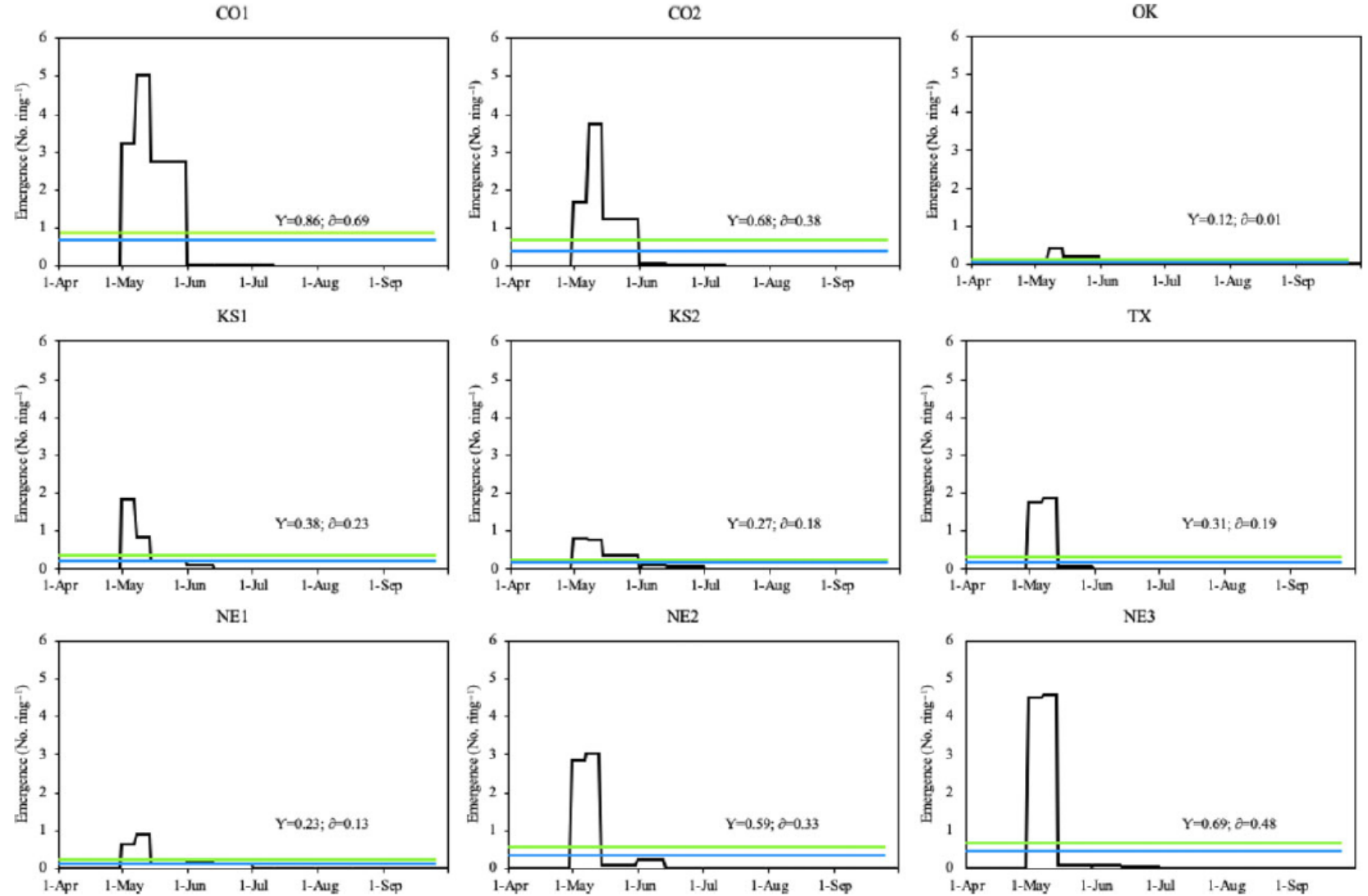
Common garden experiment field layout



Daily emergence of Palmer amaranth in 2018



Daily emergence of Palmer amaranth in 2019



- Site-specific management for Palmer amaranth
- These peak emergence cohorts provide an opportunity to control Palmer amaranth with nonselective burn-down herbicides before planting
- Need for a season-long integrated weed management strategy

Prevention

- Clean field equipment before going to the next field
- Vegetatively propagated crops (mint, asparagus, etc.) that are contaminated should not be used for propagation



Cultural Control

- Reduce plant establishment, reproduction, dispersal, and survival
- E.g. use of cover crop, mulch, crop rotation, soil solarization, etc.



Solarizing planting beds in a garden (UC IPM)



Cultural Control



Scouting For Weeds



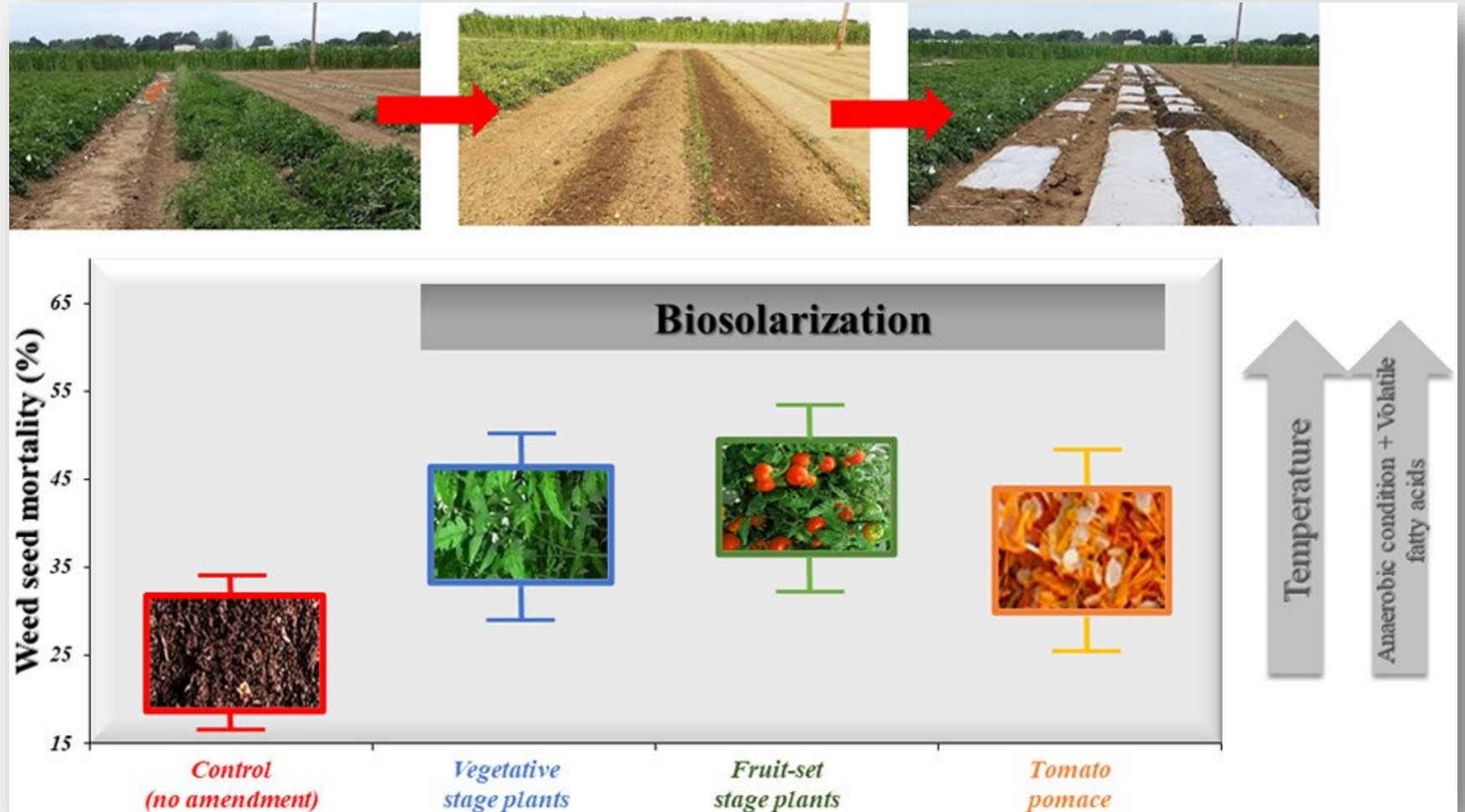
Crop Rotations



Row Spacing

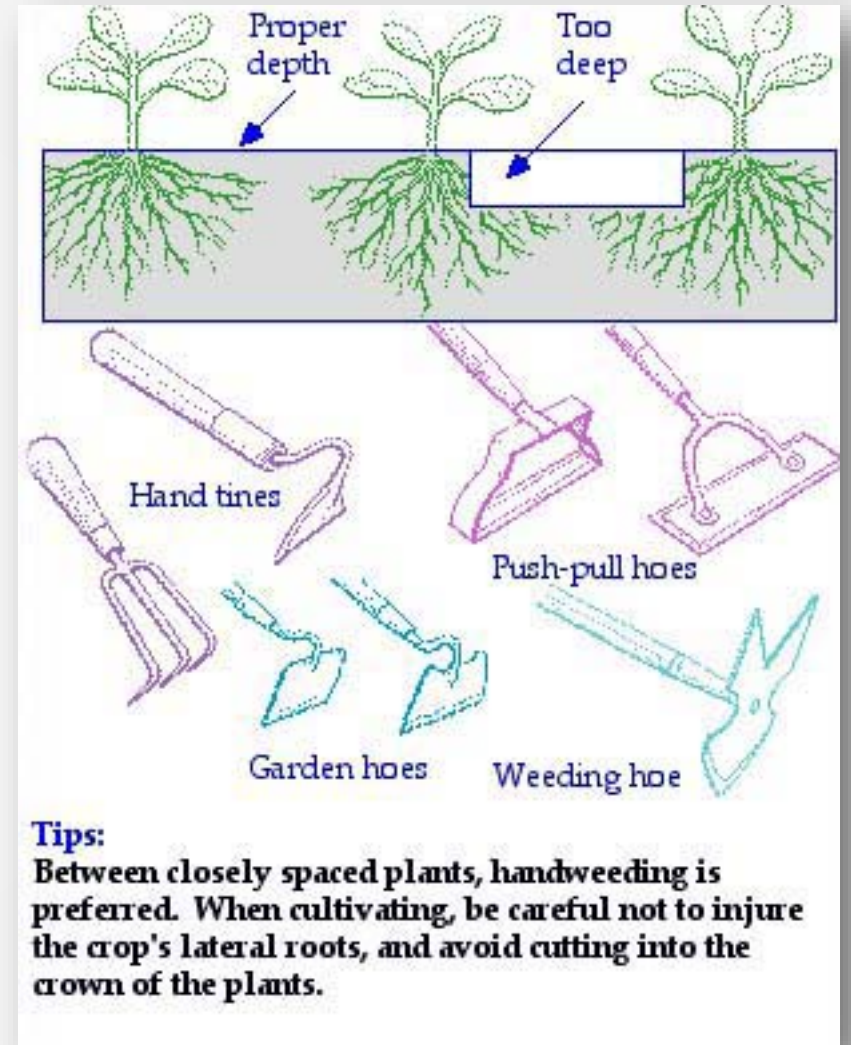
e. g. Biosolarization

An average of 47% weed seed mortality with biosolarization that utilized tomato plant terminated at the fruit-set stage as the organic amendment in California-
Osipitan et al. 2021



Mechanical Control

- Kill a pest directly, block pests out, or make the environment unsuitable for it
- E.g. tillage prior or after planting; mowing, fire, harvest weed seed control, etc.

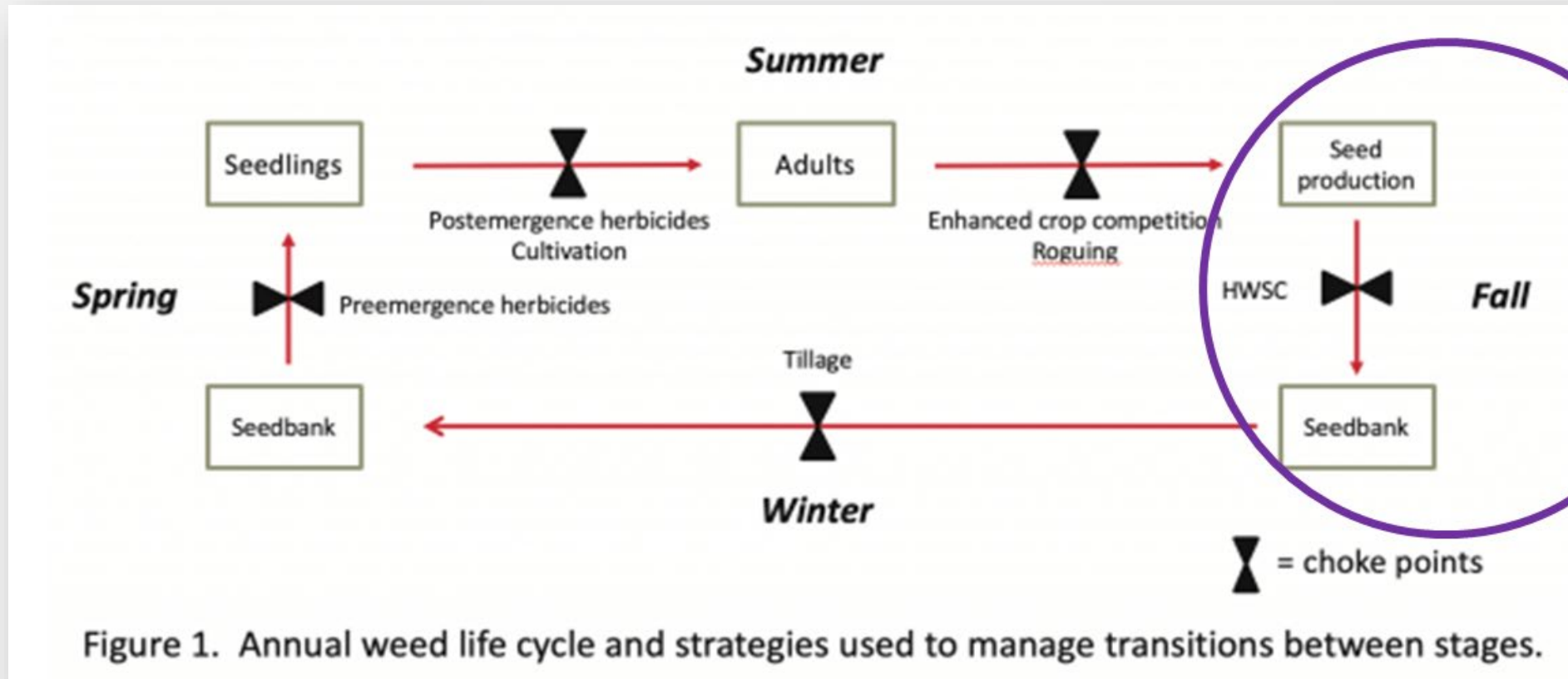


Hand-hole (pic credit: UC IPM)



Mechanical Control

e. g. Harvest Weed Seed Control (HWSC)- a technology from Australia



e.g. Seed Destructor



e.g. Chaff Lining



Figure 2. Narrow windrows form humid conditions.



FIGURE 41 The Mic Fels-designed New Holland chaff line chute in action.

PHOTO: MIC FELS



) in the fall under cooler and more

e.g. Weed Zapper (electrical weeding)



Missouri researchers used a Case IH tractor to pull the Weed Zapper, which supplies electricity to a copper bar mounted on the front. Photo credit: University of Missouri Weed Science



e.g. Lazer weeding



Biological Control

- Use of *natural enemies*—predators, parasites, pathogens, and competitors - to control weeds
- E.g., Punchervine seed weevil and stem weevil



Beetle consume weed seed (pic credit: growiwm.org)



Puncture vine seed weevil



Chemical Control

How many effective sites of action am I using?

Common ragweed

Application Timing	Herbicide	SOA number	Total SOA	Effective SOA
PRE	Bicep	5 + 15		
POST	Atrazine + glyphosate	5 + 9	2	2



e. g. John Deere See & Spray Technology



e. g. Spray Drone Technology



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Yellow nutsedge rhizomes with tubers growing through potato tubers



Yellow nutsedge rhizomes with tubers growing through a potato tuber at Nyssa, OR (Photo: courtesy of Dr. Joel Felix, Oregon State University/ Malheur Experiment Station, 2008).



Nutsedge in potato chips



Nutsedge in Potato Chips, M.J. Pavek



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2023 potato trials on yellow nutsedge



Reps: 4 Plots: 10 by 30 feet
 Appl. Amount: 20 GAL/AC Mix Size: 2.086 L (total for 4 plots; minimum=2.086 L)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Appl Timing	Appl Code	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Untreated									101	206	305	402
2	Dual II Magnum Metrixx 75DF Eptam 7E	7.64 LB/GAL 75 % 7 LB/GAL	GAL % L	EC DF L	21.28 fl oz/a 0.5 lb/a 7 pt/a	oz/a lb/a pt/a	PREPRE PREPRE PREPRE	A A A	17.34 mL/mx 6.249 g/mx 91.26 mL/mx	102	203	304	401
3	Outlook Metrixx 75DF Eptam 7E	6 LB/GAL 75 % 7 LB/GAL	L % L	L DF L	16 fl oz/a 0.5 lb/a 7 pt/a	oz/a lb/a pt/a	PREPRE PREPRE PREPRE	A A A	13.04 mL/mx 6.249 g/mx 91.26 mL/mx	103	201	307	406
4	Dual II Magnum Prowl H2O Eptam 7E	7.64 LB/GAL 3.8 LB/GAL 7 LB/GAL	GAL L L	EC L L	21.28 fl oz/a 1.5 pt/a 7 pt/a	oz/a pt/a pt/a	PREPRE PREPRE PREPRE	A A A	17.34 mL/mx 19.56 mL/mx 91.26 mL/mx	104	207	303	404
5	Dual II Magnum Matrix SG Metrixx 75DF NIS	7.64 LB/GAL 25 % 75 % 100 %	GAL % % %	EC SG DF SL	21.28 fl oz/a 1 oz/a 0.33 lb/a 0.5 % v/v	oz/a oz/a lb/a v/v	PREPRE POSPOS POSPOS POSPOS	A B B B	17.34 mL/mx 0.7811 g/mx 4.124 g/mx 10.43 mL/mx	105	204	301	405
6	Dual II Magnum Metrixx 75DF Eptam 7E Sandeia NIS	7.64 LB/GAL 75 %W/W 7 LB/GAL 75 % 100 %	GAL %W/W L % %	EC DF L DF SL	21.28 fl oz/a 0.5 lb/a 7 pt/a 1 oz/a 0.5 % v/v	oz/a lb/a pt/a oz/a v/v	PREPRE PREPRE PREPRE POSPOS POSPOS	A A A B B	17.34 mL/mx 6.249 g/mx 91.26 mL/mx 0.7811 g/mx 10.43 mL/mx	106	205	302	407
7	Matrix SG Metrixx 75DF NIS	25 % 75 % 100 %	% % %	SG DF SL	1 oz/a 0.33 lb/a 0.5 % v/v	oz/a lb/a v/v	POSPOS POSPOS POSPOS	B B B	0.7811 g/mx 4.124 g/mx 10.43 mL/mx	107	202	306	403

Sort Order: Replicate 1



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Thank You!



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